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Title : ISOTOPIC RATIOS IN THE SKIN OF THE WEST-INDIAN MANATEE (TRICHECHUS MANATUS): IMPLICATIONS FOR FEEDING HISTORY

Category : Ecology

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Abstract : It has become increasingly important to understand manatee feeding ecology and its relation to habitat use in order to improve conservation efforts. Manatees are known to consume vegetation in freshwater, estuarine, and marine environments, each of which has a distinct isotopic signature. Comparing plant signatures to those of manatee tissue can give an indication of recent feeding history. Biopsies of dermal and epidermal tissue were collected from free-ranging animals in Florida (n=41) and Belize (n=4) and from captive animals in Florida (n=5). Captive animals exhibited a $\delta^{13}\text{C}$ value of -24.4 ± 0.1 (mean \pm SE) and $\delta^{15}\text{N}$ value of 3.5 ± 0.9 consistent with a lettuce diet. Isotope values for Belize ($\delta^{13}\text{C}$ -13.1 ± 0.7 ; $\delta^{15}\text{N}$ 2.9 ± 0.6) and Southwest Florida animals ($\delta^{13}\text{C}$ -15.8 ± 1.4 ; $\delta^{15}\text{N}$ 4.2 ± 0.5) were consistent with a presumed diet of estuarine vegetation. Animals sampled in Homosassa and Crystal Rivers during late fall and winter aggregations showed a range of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values indicative of variable proportions of freshwater and/or estuarine diets. $\delta^{13}\text{C}$ values ranged from -24.3 to -14.6 (mean: -20.2 ± 0.4) and $\delta^{15}\text{N}$ values ranged from 4.3 to 9.3 (mean: 7.4 ± 0.2), suggesting that while some animals had been consistently feeding in freshwater areas, others had been feeding in estuarine areas. No manatee tissue exhibited $\delta^{13}\text{C}$ values representative of an exclusively marine diet. Our data are consistent with previous observations that freshwater springs are an essential habitat for manatees aggregating from many regions. Though manatees are known to consume marine vegetation, these data support the idea that estuarine and freshwater habitat use is necessary. This need relates both to their potential use as thermal refuges as well as sources of freshwater.